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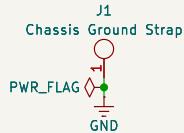
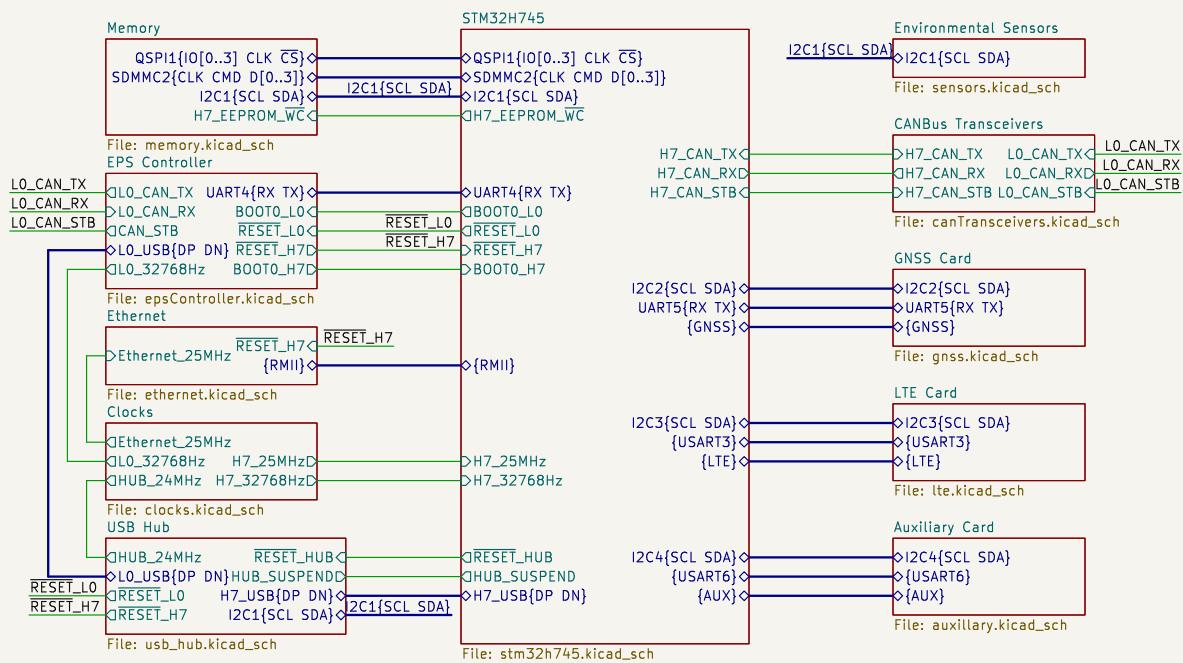
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Sheet: /

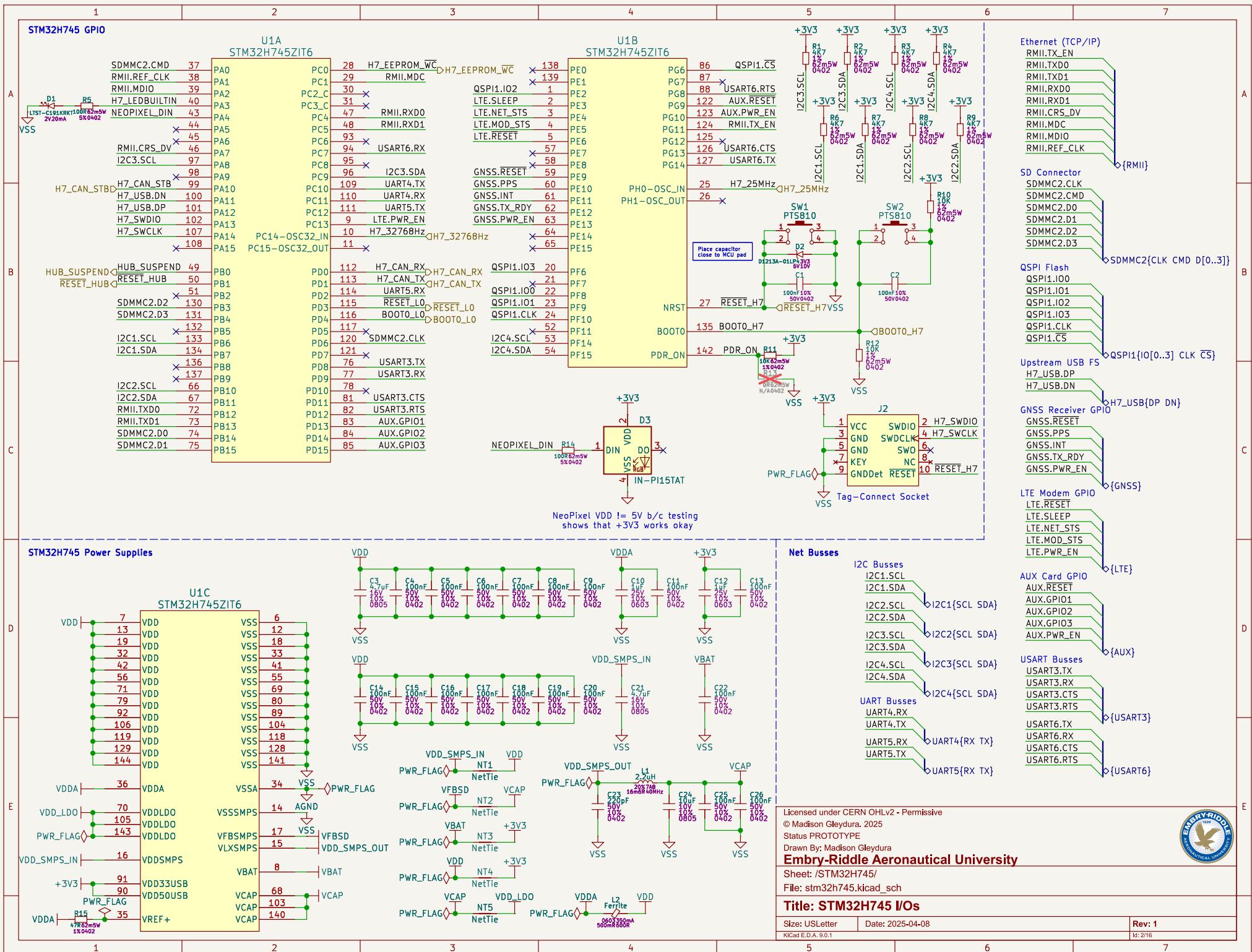
File: mainBoard.kicad\_sch

**Title: System Diagram**

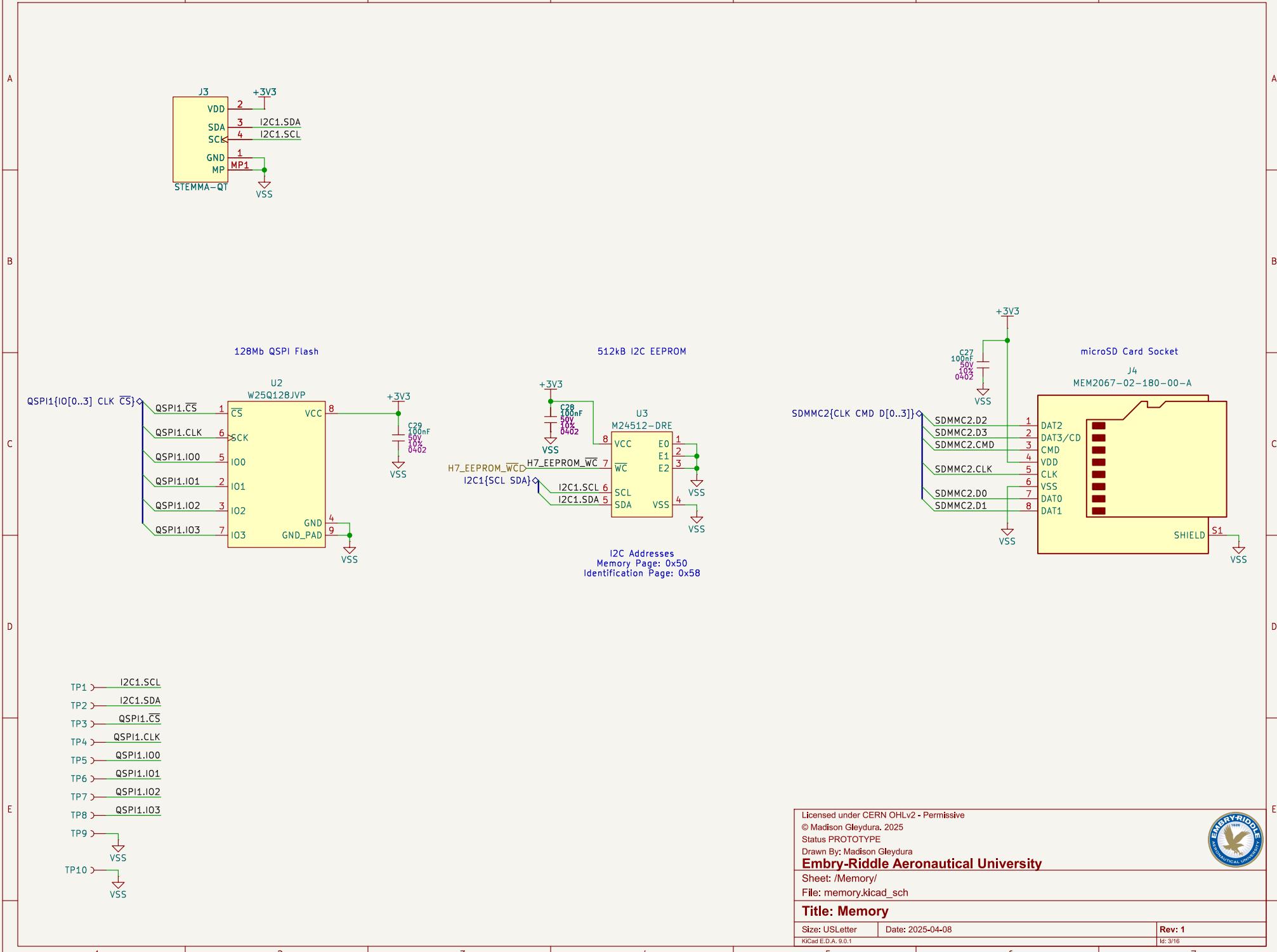
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KiCad EDA 9.0.1





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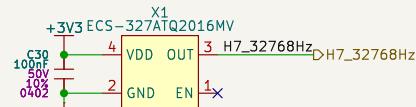
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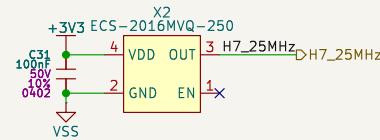
D

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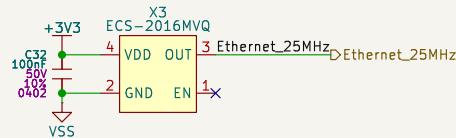
STM32H7 32.768kHz Clock



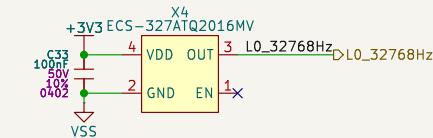
STM32H7 25MHz Clock



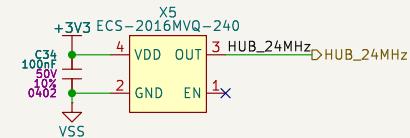
Ethernet 25MHz Clock



STM32L0 32.768kHz Clock



USB Hub 24MHz Clock



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Sheet: /Clocks

File: clocks.kicad\_sch

**Title: Clocks**

Size: USLetter Date: 2025-04-08

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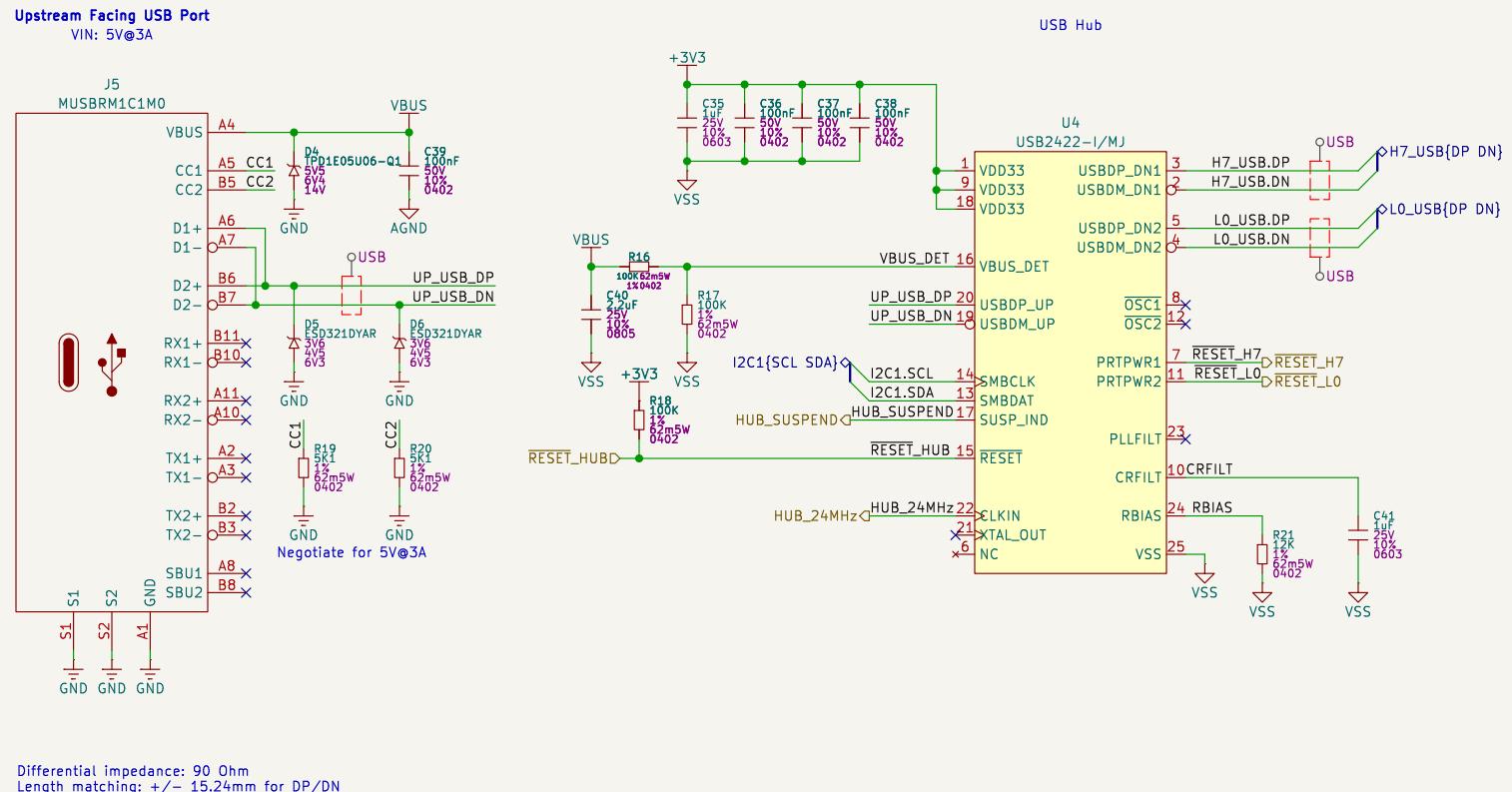
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Sheet: /USB Hub/

File: usb\_hub.kicad\_sch

**Title: USB Hub**

Size: USLetter Date: 2025-04-08

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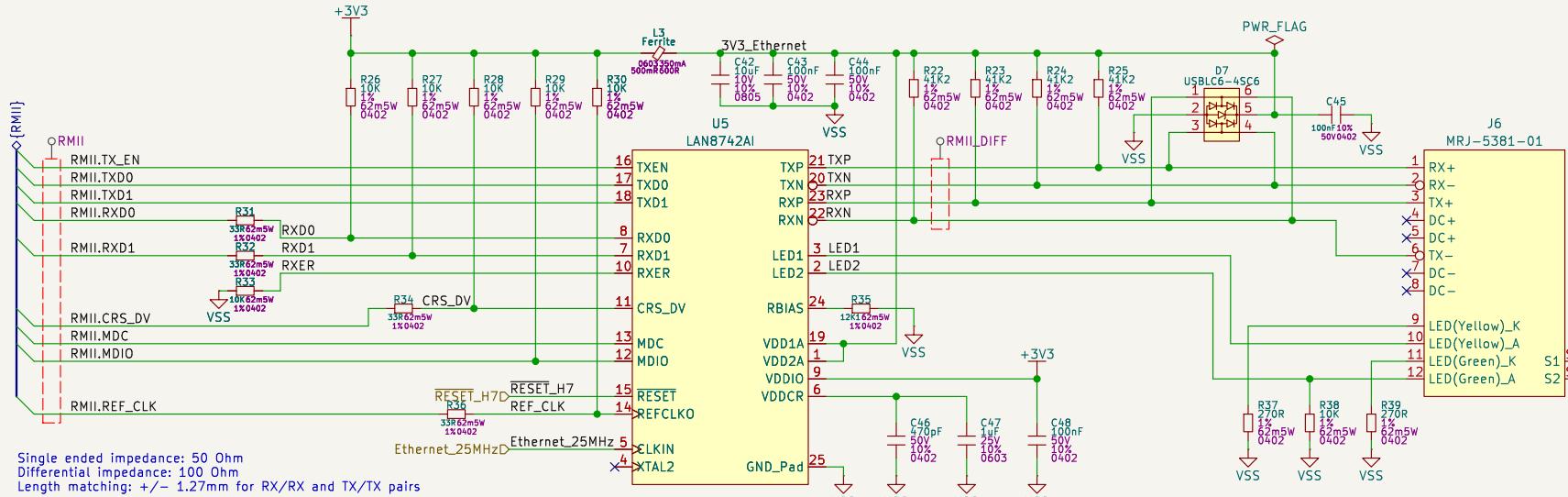
C

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TP11 → TXP  
TP12 → TXN  
TP13 → RXP  
TP14 → RXN  
TP15 → VSS

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**Embry-Riddle Aeronautical University**

Sheet: /Ethernet/

File: ethernet.kicad\_sch

**Title: Ethernet**

Size: USLetter Date: 2025-04-08

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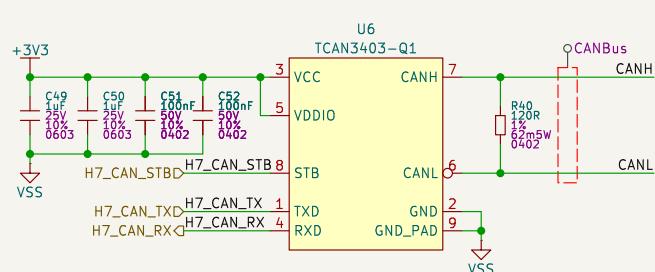


Rev: 1

Id: 6/16

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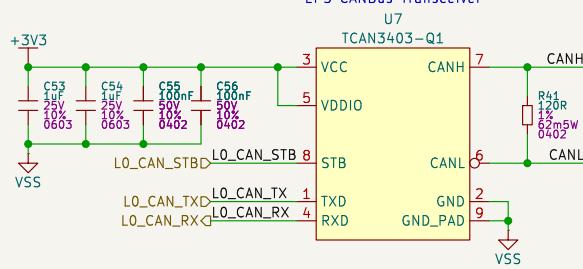
**Host CANbus Transceiver**

B

B

C

C

**EPS CANbus Transceiver**

D

D

Differential impedance: 90 Ohm  
Length matching: +/- 10mm for CANH/CANL

- TP16 → H7\_CAN\_TX
- TP17 → H7\_CAN\_RX
- TP18 → CANH
- TP19 → CANL
- TP20 → LO\_CAN\_TX
- TP21 → LO\_CAN\_RX
- TP22 → VSS
- TP23 → VSS

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Sheet: /CANBus Transceivers/

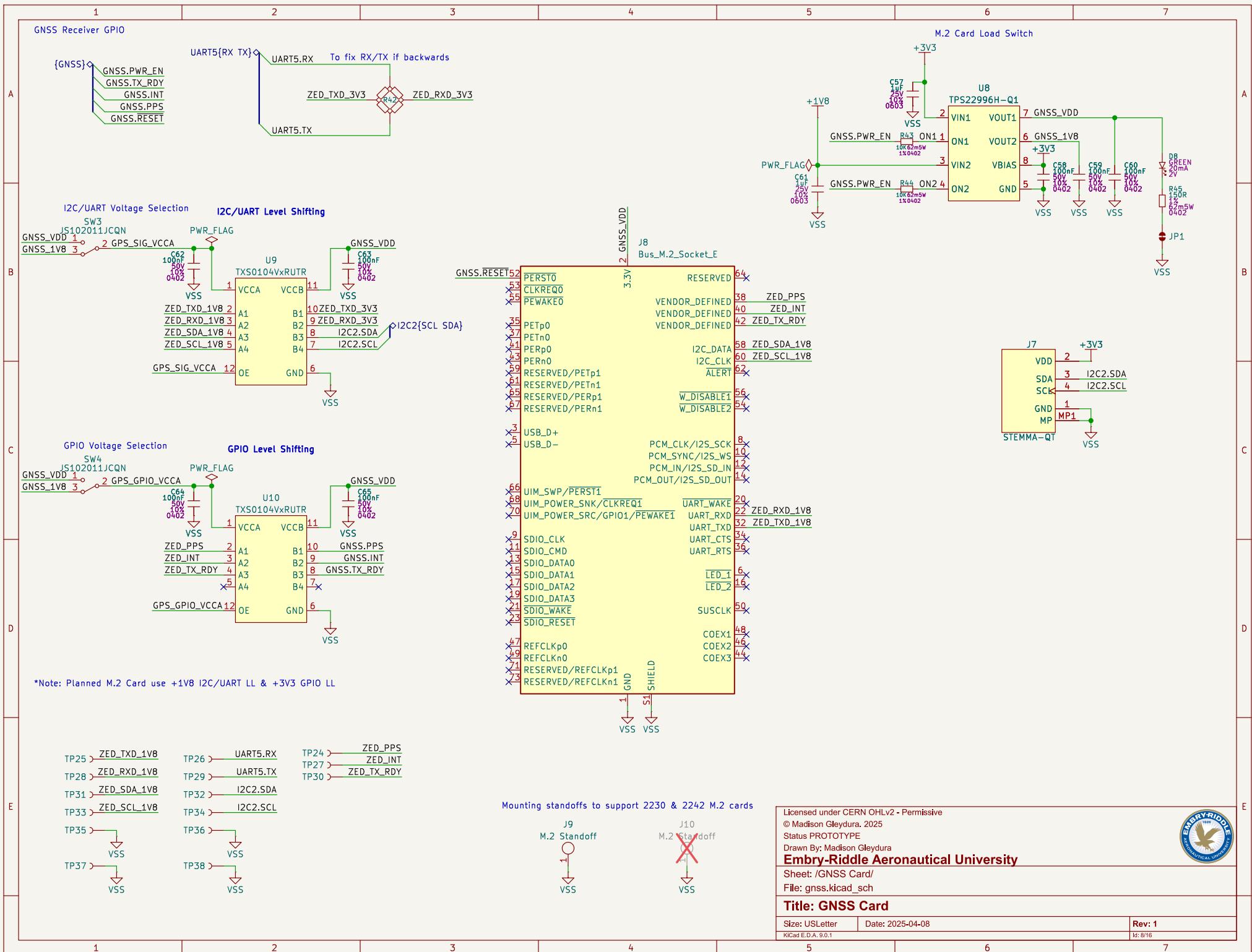
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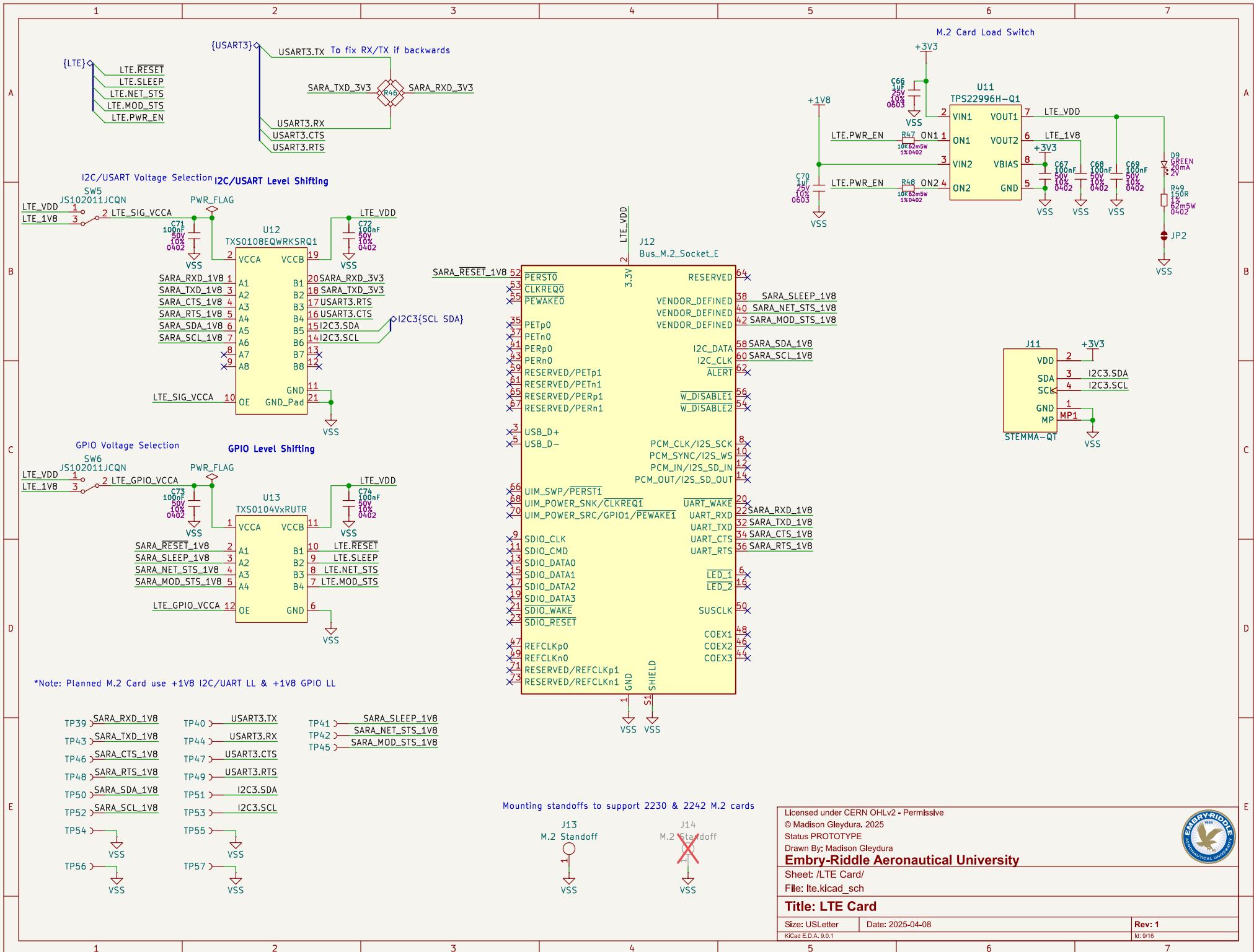
**Title: CANBus Transceivers**

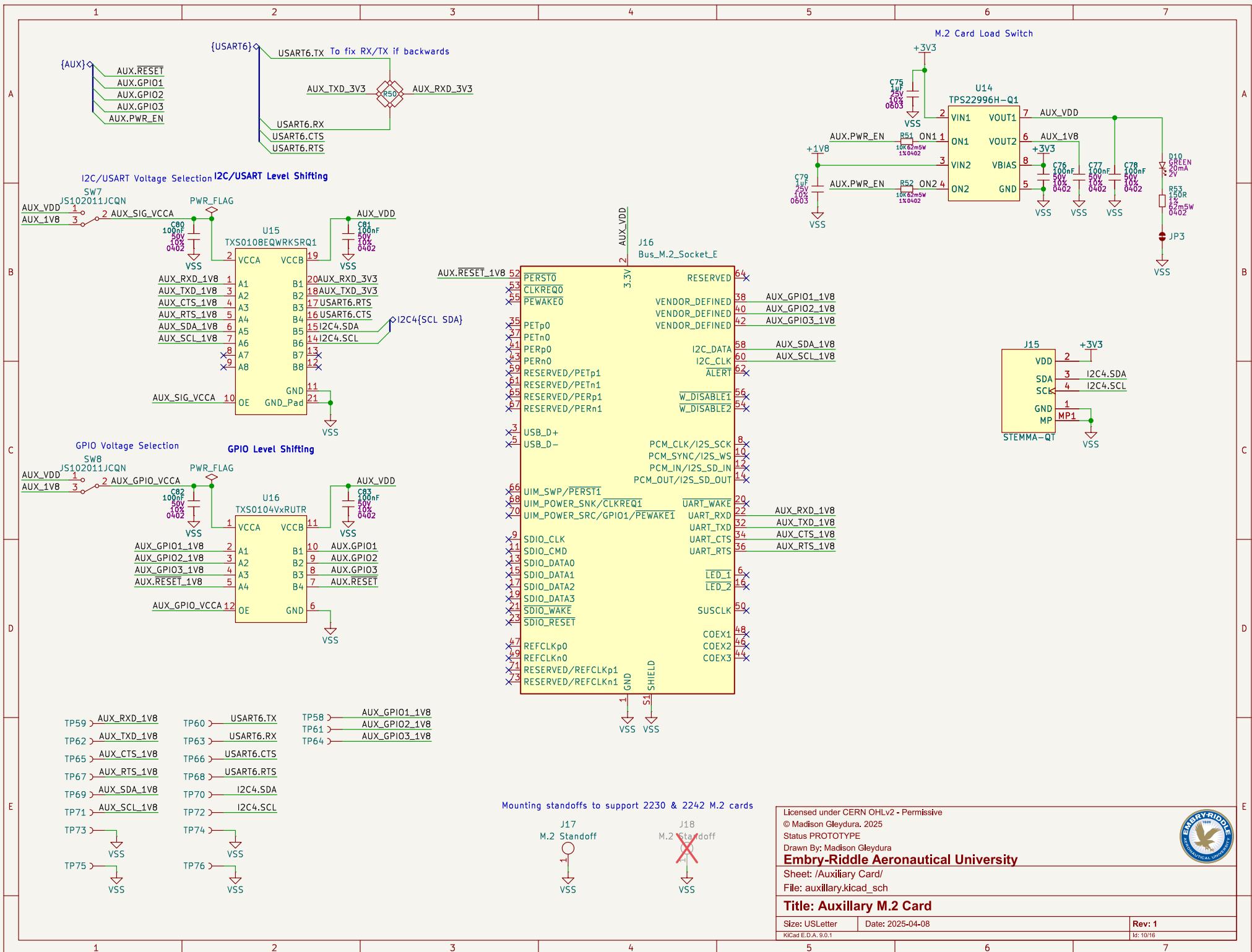
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KICad E.D.A. 9.0.1









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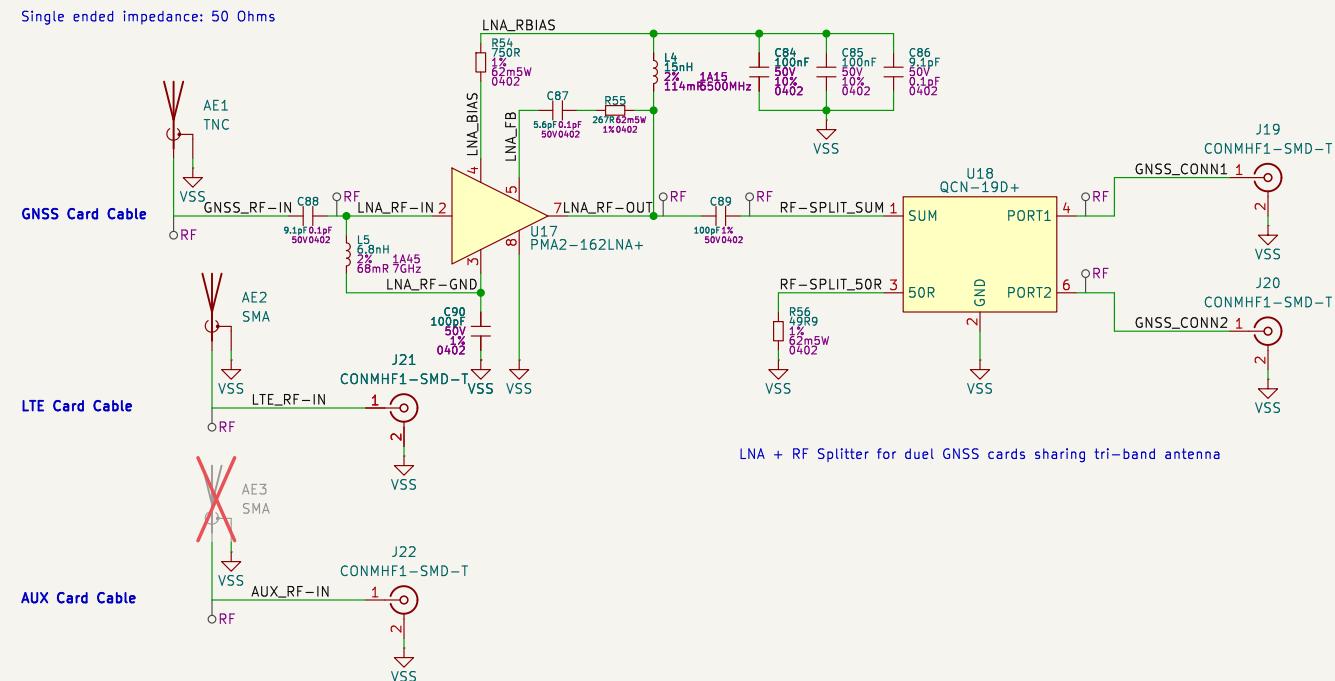
C

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SMA/TNC to u.FL to allow for full integration testing outside enclosure.  
 Panel mount RF connectors w/ soldered u.FL cable would require rear panel mounted for testing :-(

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Sheet: /RF Interface/

File: rfInterface.kicad\_sch

**Title: RF Interface**

Size: USLetter Date: 2025-04-08

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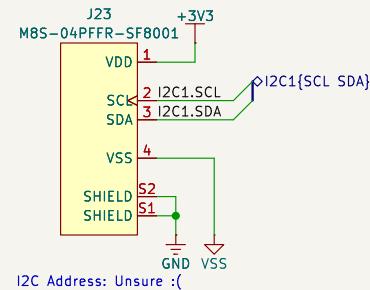
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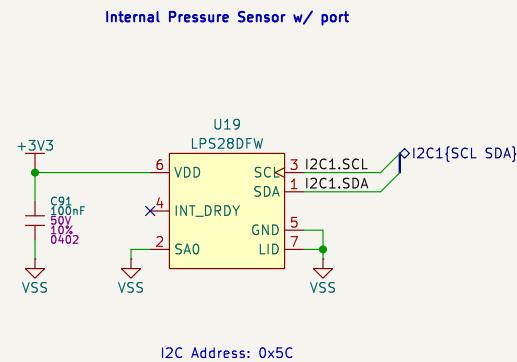
D

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External Temperature/Humidity Sensor



Internal Pressure Sensor w/ port



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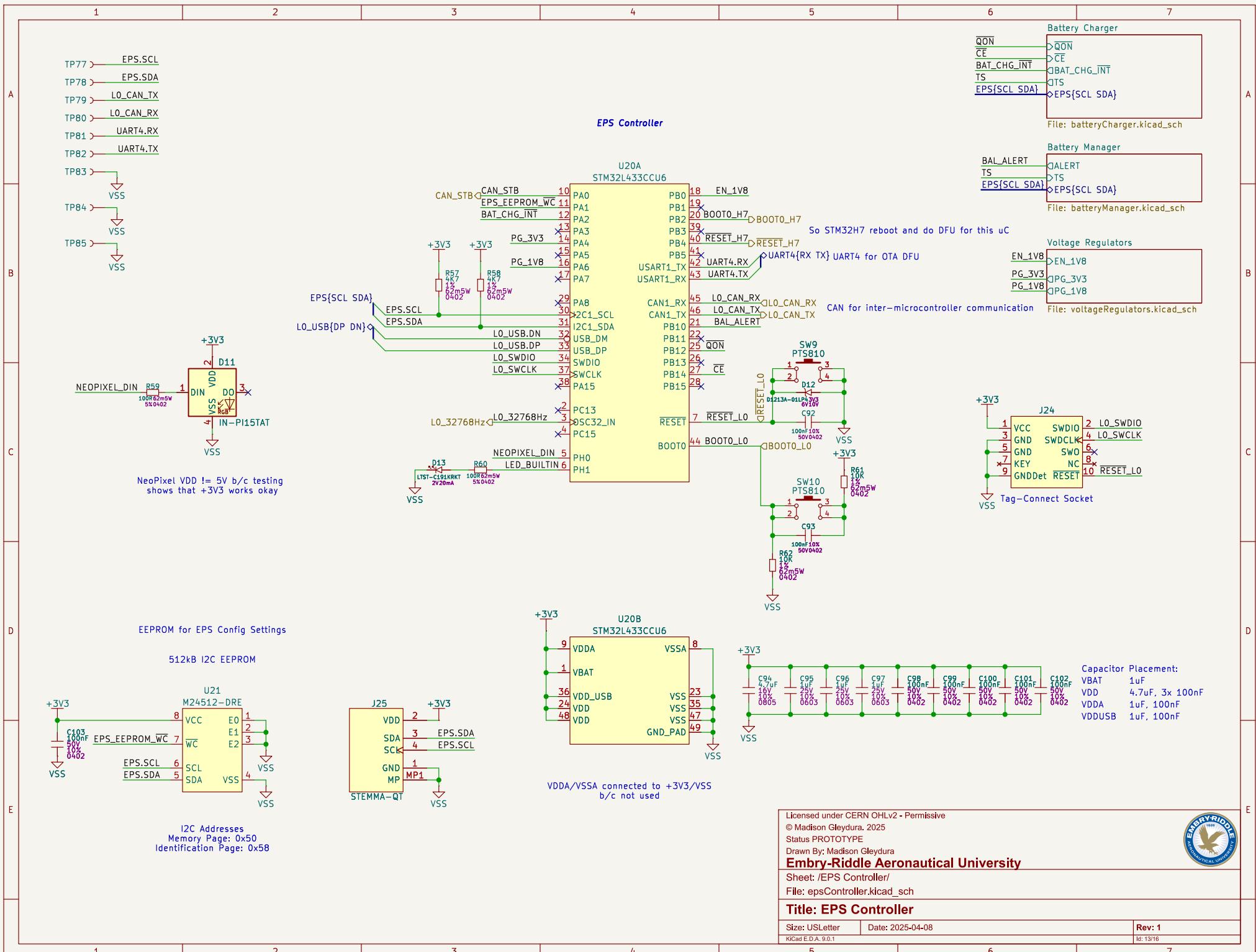
Sheet: /Environmental Sensors/  
 File: sensors.kicad\_sch

**Title: Environmental Sensors**

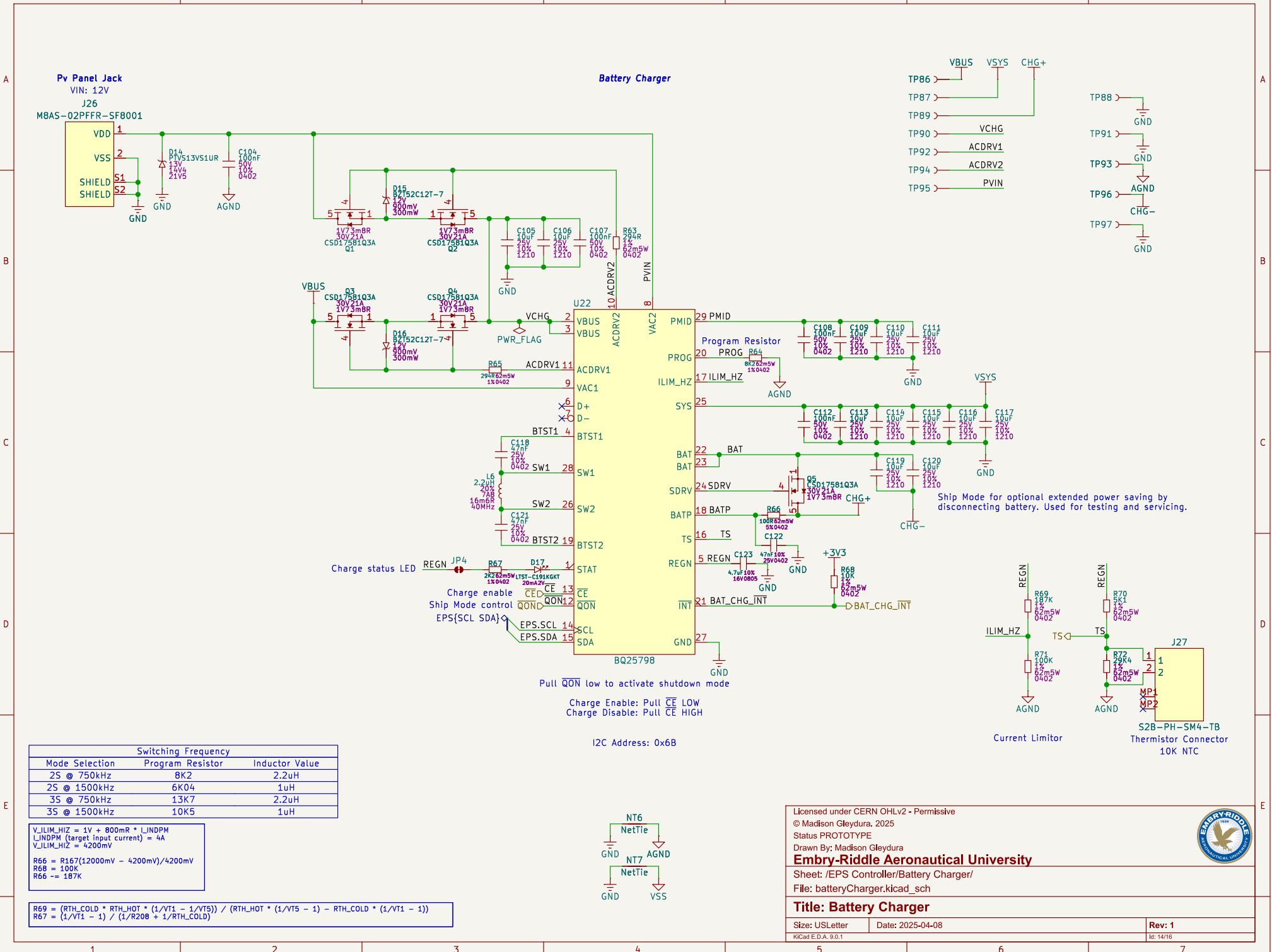
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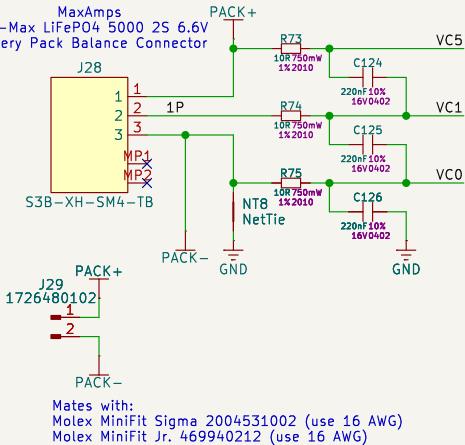
Rev: 1  
 Id: 12/16



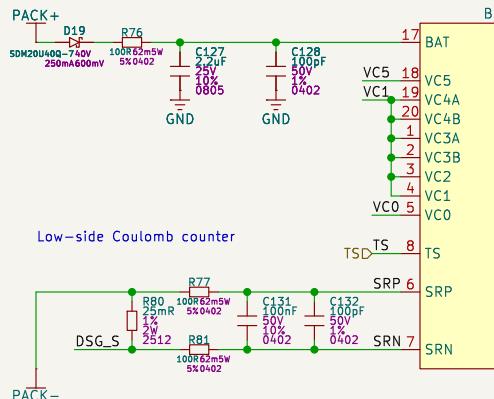


1 2 3 4 5 6 7





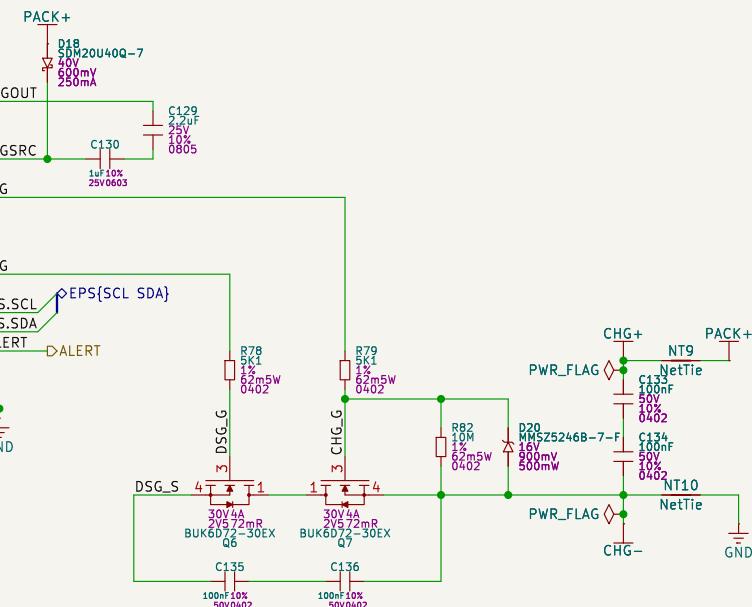
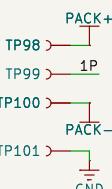
Battery Balancer and Protector



Sense Resistor Calculation:  
 $V_{SRP-SRN} = -200mV - 200mV$   
 $I_{Max} = 8A$  (way overkill)

$$R_{sense} = V_{SRP} / I_{Max}$$

$$R_{sense} = 200mV / 8A = 25m\Omega$$



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Sheet: /EPS Controller/Battery Manager/

File: batteryManager.kicad\_sch

**Title: Battery Monitor and Protector**

Size: USLetter Date: 2025-04-08

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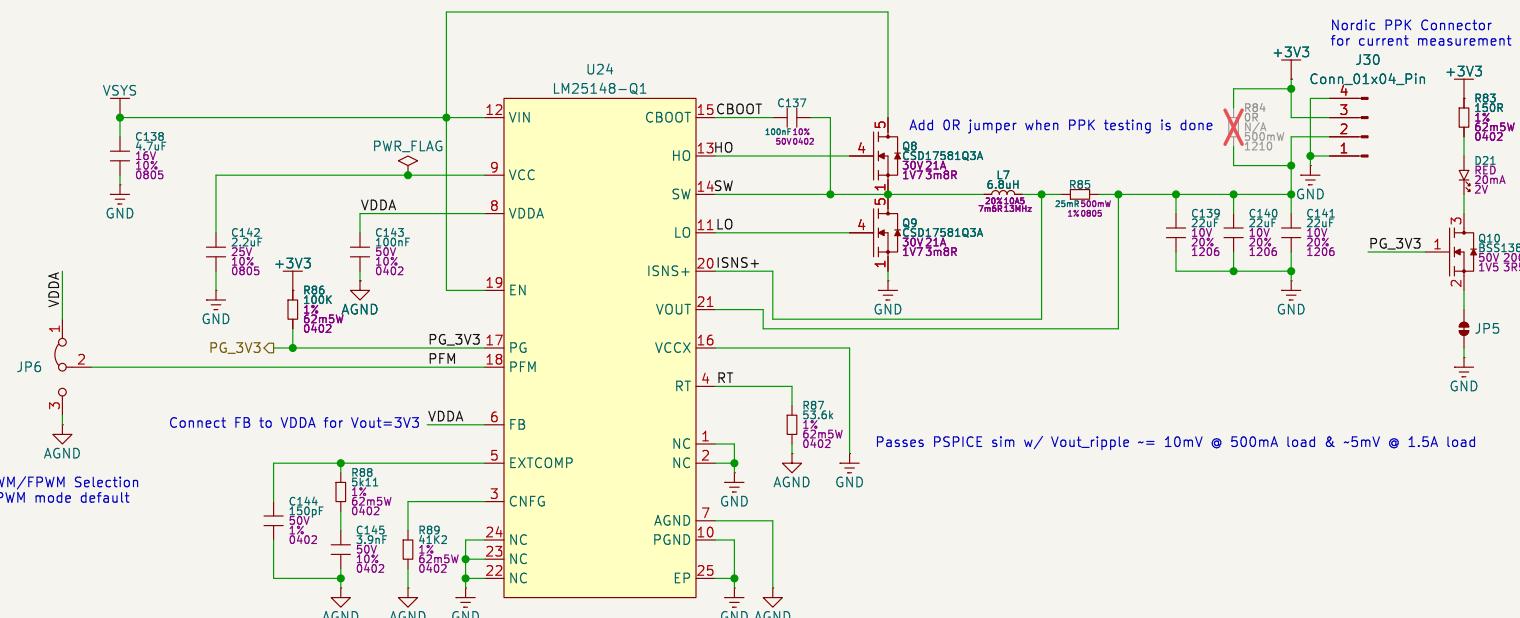


Rev: 1

Id: 15/16

1 2 3 4 5 6 7

+3V3 Voltage Regulator • 0.5–1.75A & 406kHz



PWM/FPWM Selection  
PWM mode default

Connect FB to VDDA for Vout=3V3

VDDA

PG\_3V3

JP6

AGND

PG\_3V3

JP6

AGND